

*Bell Work*  
*24-April-17*

**Please compute the “ $-\log(7)$ ”  
using your calculator?**

**What are acids and bases?**

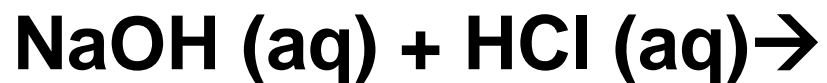
EQ: What bases have you used today and how did they help you?

**Agenda:**  
**introduction to Acid Base Chemistry**

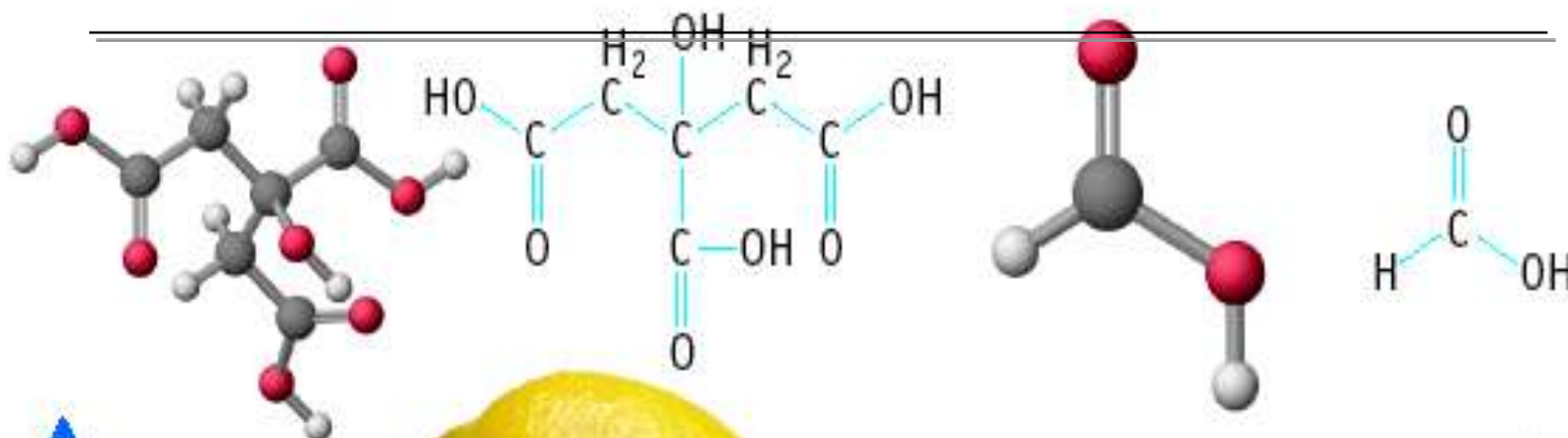
Objective:

Following the lesson you will be able to name simple acids and bases, know a general definition of an acid, and know how acids and bases taste

# ***Visual Introduction to Acid Base Chemistry***



# Acid and Bases



▲ The tartness of lemons and oranges comes from the weak acid citric acid. The acid is found widely in nature and in many consumer products.  
(Charles D. Winters)



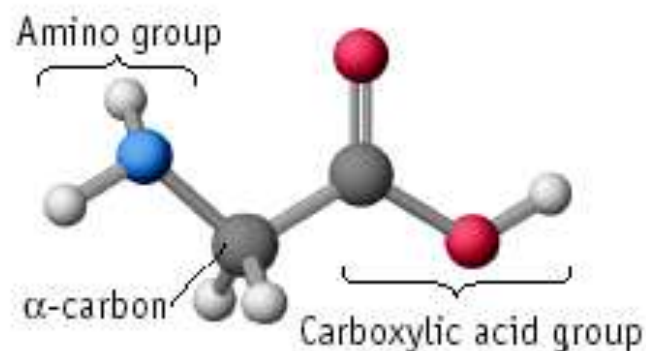
▲ The sting of ants is due to the weak acid formic acid,  $\text{HCO}_2\text{H}$ .  
(Gallo Images/@ CORBIS)



# Acid and Bases



▲ Aspirin is a weak acid that has been used as an analgesic for over 100 years.  
(Charles D. Winters)

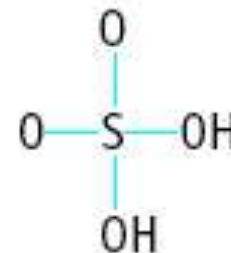


▲ Glycine is representative of the amino acids that are the basis of proteins. The  $-\text{CO}_2\text{H}$  group is the acid portion of the molecule, and the  $-\text{NH}_2$  group is the basic portion. (Charles D. Winters)

# Acid and Bases



▲ Caffeine is a well known stimulant and a weak base. (Charles D. Winters)



▲ A sea slug excretes the strong acid sulfuric acid in self-defense. (Sharksong/ M. Kazmers/Dembinski Photo Associates)



# *Acids*

Multiple definitions:

Lewis

Arrhenius

Bronsted Lowry

Generally it's a chemical compound that produces a hydrogen ion concentration higher than pure water:  
 $[H^+]$  or  $[H_3O^+]$



# *Acids*



React with carbonates and bicarbonates to produce carbon dioxide gas

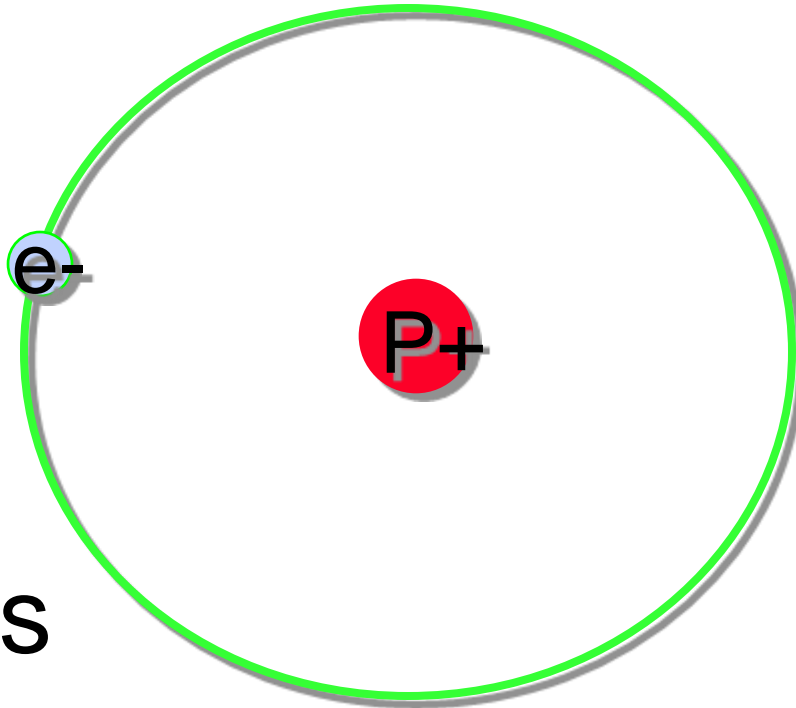
Have a sour taste. Vinegar is a solution of acetic acid. Citrus fruits contain citric acid.



# *Some Properties of Acids*

Produce  $\text{H}^+$  (as  $\text{H}_3\text{O}^+$  ions in water):

Call a “proton”



Taste sour

Corrode metals

# *Acid Nomenclature Review*

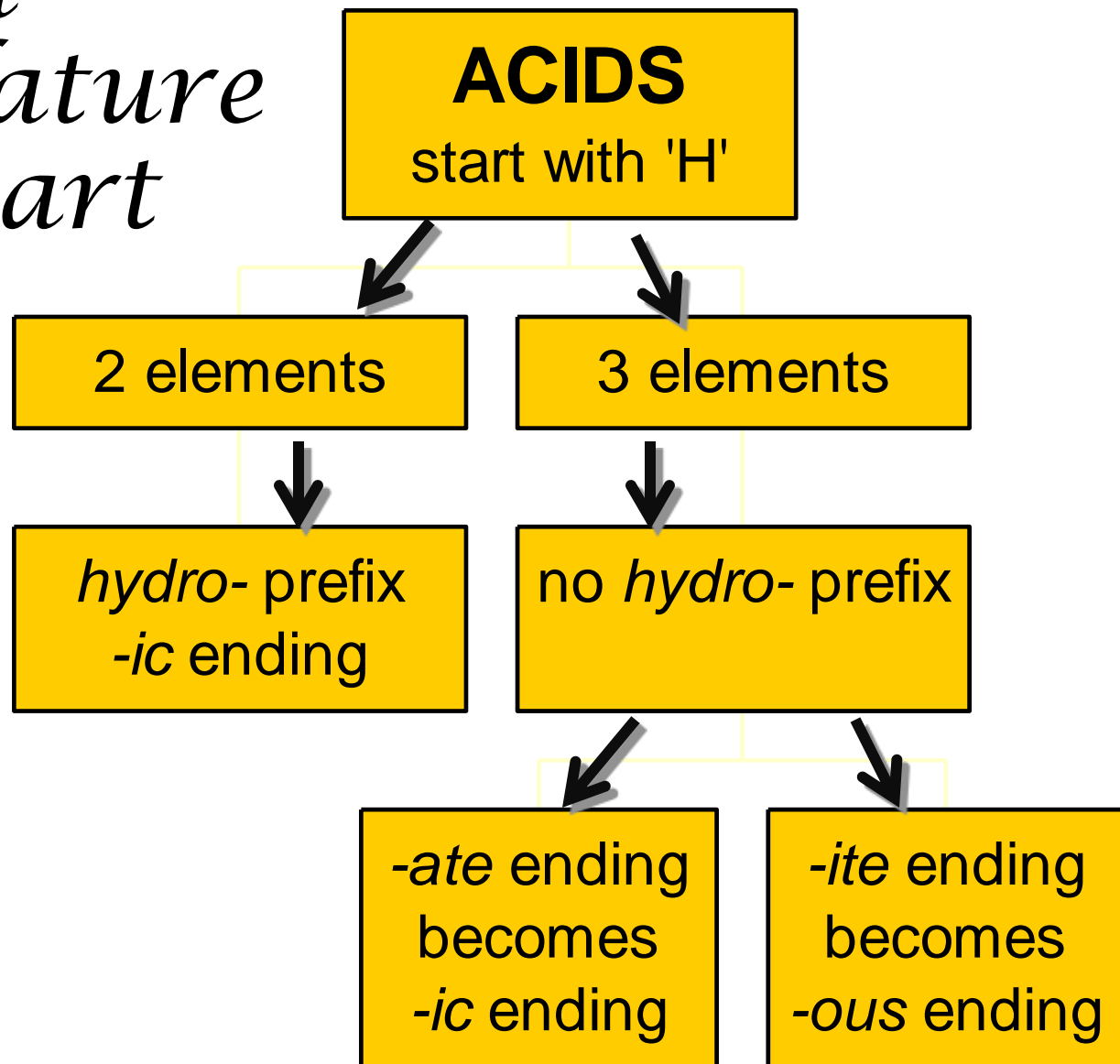
Anion Ending		Acid Name
Binary	→ <b>-ide</b>	<b>hydro-(stem)-ic acid</b>
Ternary	→ <b>-ate</b>	<b>(stem)-ic acid</b>
	→ <b>-ite</b>	<b>(stem)-ous acid</b>

# *Acid Nomenclature Review*

*An easy way to remember which goes  
with which...*

*“In the cafeteria, you ATE something  
ICky”*

# *Acid Nomenclature Flowchart*



# *Acid Nomenclature Review*

$\text{HBr}_{(\text{aq})} \Rightarrow \text{hydrobromic acid}$

$\text{H}_2\text{CO}_3 \Rightarrow \text{carbonic acid}$

$\text{H}_2\text{SO}_3 \Rightarrow \text{sulfurous acid}$

# *Strong Acids*

Completely dissociates in water.

You will need to remember these three:



*Name 'Em!*

**HF**

**HCl**

**H<sub>2</sub>SO<sub>4</sub>**

**HNO<sub>3</sub>**

**HIO<sub>3</sub>**

Which are  
strong acids?



# *Bases*

A chemical species that donates hydroxide ions ( $\text{OH}^-$ ) or that accepts protons.

Have a bitter taste.

Feel slippery. Many soaps contain bases.



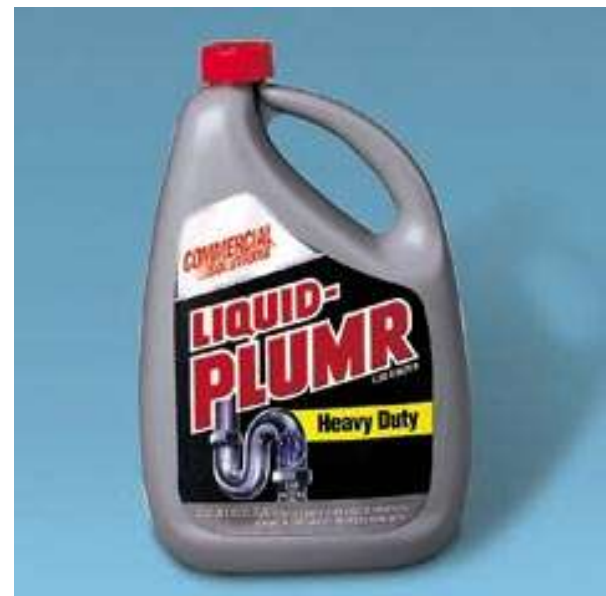
# *Some Properties of Bases*

Produce  $\text{OH}^-$  ions in water

Taste bitter, chalky

Are electrolytes

Feel soapy, slippery



## *Name these Common Bases*

**NaOH**

Drain cleaner

**KOH**

Liquid soap

**Ba(OH)<sub>2</sub>**

Stabilizer for plastics

**Mg(OH)<sub>2</sub>**

Milk of magnesia

**Al(OH)<sub>3</sub>**

Maalox (antacid)

## *Naming Bases*

Group I metals all form strong bases with hydroxide

Same name as chemical name

Ex. NaOH – Sodium hydroxide

List the rest of them (write their names and chemical formulas)

**KNOW THEM**

## *Recall...*

In your own words define:

What an acid and base are,

How can you distinguish them,

How do you name them

# Bell Work

## 25.April.2017

Name the following acids and bases:

**CsOH**

**HBr**

**HNO<sub>2</sub>**

Write the correct formula for the following acid and bases

**Ammonia**

**Acetic Acid**

**Carbonic Acid**

**Hydroiodic Acid**

EQ: What bases have you used today and how did they help you?

## **Agenda:**

### **Understanding the pH scale PHet Simulation**

#### **Objective:**

Following the lesson you will be able to name identify what the pH scale is, the relative difference in values on the scale and where common house hold solution register.

# Home Work

**Be able to label acids, bases, conjugate bases, and conjugate acids in a balance acid base reaction. You may use you text book to accomplish this.**

# Introduction to pH

**PhET Simulation on class website under labs  
“Under Standing pH”**

**Due 1May2017**